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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Board of Patent Appeals and Interferences

In re application of:	Bolt	)	
Serial No:	10/072,437	)	Art Unit 2166
Filed:	February 5, 2002	)	
For:	EMULATED BACKUP TAPE DRIVE USING DATA COMPRESSION	)	
Examiner:	Woo, Isaac M.	)	
Attorney Docket:	Q02-1032-US1 / 11198.85	)	

BRIEF ON APPEAL

Mail Stop Appeal Brief Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is a timely Appeal to the Board of Patent Appeals and Interferences from the Examiner's Final Rejection dated April 18, 2007 (hereinafter "Final Rejection"), of pending claims 2-11, 13-22 and 28-43 in the present application. A Notice of Appeal and the required fees were previously filed on July 10, 2007. The instant Brief on Appeal is timely filed within two months of the Notice of Appeal.

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TABLE OF CONTENTS

I. Real Party in Interest

The real party in interest is Quantum Corporation, assignee of the present application.

II. Related Appeals and Interferences

There are no appeals or interferences that are known which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

III. Status of Claims

Claims 2-11, 13-22 and 28-43 are pending in the present application. Claims 1, 12 and 23-27 have previously been canceled without prejudice. Claims 2-11, 13-22 and 28-43 are the subject of this appeal.

IV. Status of Amendments

No claims have been amended subsequent to final rejection.

V. <u>Summary of Claimed Subject Matter</u>

As set forth generally in independent claim 28, one embodiment is directed toward a storage system 10 including a primary storage location 18, a backup storage device 20 and a controller 48. (Page 3, lines 19-22; page 4, lines 24-28; Figs. 1, 2C and 3). The controller 48 transmits data between the primary storage location 18 and the backup storage device 20 according to a duty cycle having a predetermined backup window period when uncompressed data from the primary storage location 18 is copied to the backup storage device 20. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4). The duty cycle also includes an idle period when uncompressed data from the primary storage location 18 is not being copied in uncompressed form to the backup storage device 20. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4). During the idle period, the controller 48 retrieves the uncompressed data storage on the backup storage device 20, compresses the retrieved data and then re-stores the compressed data on the backup storage device 20. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4).

As set forth generally in independent claim 31, another embodiment is directed toward a storage system 10 including a primary storage location 18 having an input/output port 46, a backup storage device 20 and a controller 48. (Page 3, lines 19-22; page 4, lines 24-28; Figs. 1, 2C and 3). The controller 48 copies uncompressed data from the primary storage location 18 to the backup storage device 20 during a predetermined backup period. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4). The controller 48 also retrieves the uncompressed data from the backup storage device 20, compresses the retrieved data, and then re-stores the compressed data on the backup storage device 20

during an idle period that begins following a predetermined time period of inactivity through the input/output port 46. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4).

As set forth generally in independent claim 32, still another embodiment is directed toward a method for storing data from a primary storage location 18 having an input/output port 46 onto a backup storage device 20. (Page 3, lines 19-22; page 4, lines 24-28; Figs. 1, 2C and 3). In this embodiment, the method includes the steps of copying uncompressed data (steps 86, 88, 90) during a predetermined backup window period from the primary storage location 18 to the backup storage device 20, compressing the data (step 96) with a controller 48 during an idle period (step 92) defined by when uncompressed data is not being copied from the primary storage location 18 to the backup storage device 20, and re-storing the compressed data onto the backup storage device 20 during the idle period (step 98). (Page 6, lines 7-26; page 7, lines 6-17; Figure 4).

As set forth generally in independent claim 36, still another embodiment is directed toward a method for storing data from a primary storage location 18 having an input/output port 46 onto a backup storage device 20. (Page 3, lines 19-22; page 4, lines 24-28; Figs. 1, 2C and 3). In this embodiment, the method includes the steps of copying uncompressed data from the primary storage location 18 through the input/output port 46 to the backup storage device 20 (steps 86, 88, 90), compressing the data copied to the backup storage device 20 with a controller 48 during an idle period (step 96) that begins following a predetermined time period of inactivity through the input/output port 46, and re-storing the compressed data onto the backup storage device 20 with the controller 48 during the idle period (step 98). (Page 6, lines 7-26; page 7, lines 6-17; Figure 4).

Additionally, as set forth generally in independent claim 43, another embodiment is directed toward a storage system 10 including a primary storage location 18, a backup storage device 20 and a controller 48. (Page 3, lines 19-22; page 4, lines 24-28; Figs. 1, 2C and 3). The controller 48 transmits data between the primary storage location 18 and the backup storage device 20 according to a duty cycle having a backup window and an idle period. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4). The controller 48 transmits uncompressed data from the primary storage location 18 for copying to the backup storage device 20 during the backup window period. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4). Further, the controller 48 determines initiation of the idle period based on a predetermined time period of inactivity of data transmission through the input/output port 46. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4). The controller 48 terminates the idle period once data transmission through the input/output port 46 occurs. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4). During the idle period, the controller 48 initiates (i) compression of uncompressed data stored on the backup storage device 20, and (ii) restorage of compressed data onto the backup storage device 20. (Page 6, lines 7-26; page 7, lines 6-17; Figure 4).

VI. Grounds of Rejection to be Reviewed on Appeal:

1. Whether claims 2-11, 13-22 and 28-43 are anticipated by Karasudani et al. (US 6,378,054) under 35 U.S.C. §102(e)?

VII. **Argument:**

Issue 1: Whether claims 2-11, 13-22 and 28-43 are anticipated by Karasudani et al. (US 6,378,054) under 35 U.S.C. §102(e)?

Claims 2-11, 13-22 and 28-43 were rejected under 35 U.S.C. § 102(e) as being anticipated by Karasudani et al. (US 6,378,054). The Appellant respectfully submits that Karasudani et al. does not support a rejection of these claims because Karasudani et al. does not teach or suggest the features of claims 2-11, 13-22 and 28-43, as provided below.

General Comments Regarding Karasudani et al.

Karasudani et al. is directed toward a data backup device 40 that includes a first storage section 20 (memory A) and a second storage section 30 (memory B). (Col. 8, lines 52-59). Data files stored in the first storage section 20 are stored in the second storage section 30 in a duplicated manner. (Col. 8, lines 57-59; emphasis added). Memory A 20 and memory B 30 are each configured in the form of external storage devices such as hard disks. (Col. 8, lines 59-61; emphasis added). Thus, Karasudani et al. uses two separate storage devices 20, 30 to store the duplicative copies of the same data, whether the data is compressed or uncompressed.

Karasudani et al. teaches that data on a computer 1 undergoes a certain selection process 101, an archive creation process 102 and then a backup process 103 when data is backed up. These three steps are performed by the CPU 10. (See Figure 1).

Karasudani et al. teaches that data is copied from Memory A 20, and is backed up onto Memory B 30 in one form or another. (Figures 4 and 11-15; Col. 14, lines 20-22; Col. 16, lines 15-33; Col. 16, lines 42-53; Col. 17, lines 4-19; and Col. 18, lines 4-10). These Figures and the descriptions for each Figure clearly illustrate and describe that various data files in the first storage device 20 are combined into an archive file that is then copied to the second storage device 30.

The stated purposes for combining these smaller files into an archive file is to reduce the number of times each data file needs to be opened and closed, and to reduce the number of "files" that need to be copied from the first storage section 20 to the second storage section 30. (Col. 9, lines 51-55; Col. 10, lines 60-65; Figure 4). In contrast, if files A, B and D were copied separately to the second storage device 30, each file (A, B and D) would need to be opened and closed separately, thereby taking more time. (Col. 9, lines 51-55; Col. 10, lines 60-65; Figure 4). In any event, Karasudani et al. does not teach or suggest that data is retrieved from Memory A 20, compressed, and then re-stored <u>back in Memory A 20</u>.

For example, Karasudani et al. teaches that the files in the first storage section 20 are analyzed by a selection section 101 of the CPU 10. (Col. 9, lines 30-38). The selection section 101 determines whether certain files in the first storage section 20 satisfy particular given conditions, i.e. minimum size, newly created files, etc. (Col. 9, lines 30-38 and 60-67; Col. 10, lines 1-6 and 14-18). If the given conditions of certain data files are met, those certain files can be grouped together as an "archive file" from the first storage section 20, which is then <u>copied</u> in a duplicative manner to the second storage section 30 in compressed form. (Col. 14, lines 15-22; Figure 4).

Files that do not satisfy the given conditions are simply copied without compression from the first storage section 20 to the second storage section 30, such as data files C and E. (Col. 14, lines 29-43; Figure 4). Karasudani et al. does not teach retrieval of actual data files, compression of those files and re-storage of those files, but instead duplicates files that are then compressed and stored.

In another embodiment, certain data files from the first storage section 20 are first compressed, then the compressed data files are combined into an archive file that is stored in the second storage section 30. (Col. 14, lines 44-57; Figure 6). Thus, in each embodiment, Karasudani et al. teaches that data files from one storage section 20 are duplicated as data files and/or an archive file in compressed or uncompressed form, to the other storage section 30. Karasudani et al. does not teach or suggest that data files from the first storage section 20 are retrieved, compressed, and re-stored on the same backup storage device 20 in a non-duplicative manner.

Importantly, Karasudani et al. is completely silent on the timing of this copying from the first storage device 20 to the second storage device 30 relative to data being copied to the first storage device 20 from the computer 1. Stated another way, Karasudani et al. does not teach or suggest that copying of data from the first storage device 20 to the second storage device 30 can only occur when data is not being copied to the first storage device from the "source" (Figure 19), or from the "source" to the "destination". In Karasudani et al., the source is the computer 1, and the destination is the first storage device 20.

Karasudani et al. does not teach or suggest that retrieval of data from the first storage device 20, compression of this data, and re-storage of this compressed data back

onto the first storage device 20 <u>ever</u> occurs, let alone that it occurs during an idle period that begins following a <u>predetermined time period of inactivity</u> through an input/output port of the computer.

In addition, because Karasudani et al. does not teach or suggest that retrieval of data from the first storage device 20, compression of this data, and re-storage of this compressed data back onto the first storage device 20 <u>ever</u> occurs, it logically follows that Karasudani et al. likewise does not teach or suggest that such activity occurs during an idle period when uncompressed data from the computer is not being copied in uncompressed form to the first storage device 20.

Also, because Karasudani et al. does not teach or suggest that retrieval of data from the first storage device 20, compression of this data, and re-storage of this compressed data back onto the first storage device 20 <u>ever</u> occurs, it also logically follows that Karasudani et al. does not teach or suggest that a controller terminates this process once data transmission through the input/output port occurs.

<u>Claims 28-30</u>

First, the Examiner asserts in his Final Rejection that "Karasudani teaches a controller that transmits data between the primary storage location and the backup storage device according to a duty cycle having a predetermined backup window period (Col. 11, lines 5-29, Col. 5, lines 3-26) when uncompressed data from the primary storage location (i.e. backup from source to destination fig. 19) is copied to the backup storage device (Col. 11, lines 5029, Col. 3, lines 25-33), and an idle period when uncompressed data from the

primary storage location is not being copied in uncompressed form to the backup storage device (Col. 11, lines 5-29, Col. 2, lines 25-33) ...".

The Appellant submits that Karasudani et al. does not make this distinction between a backup window period and an idle period. Karasudani et al. is completely silent on the timing of copying data from the first storage device 20 to the second storage device 30 relative to data being copied to the first storage device 20 from the computer 1. In other words, Karasudani et al. does not teach or suggest that copying of data from the first storage device 20 to the second storage device 30 can only occur when data is not being copied to the first storage device from the "source" (See Figure 19), or from the "source" to the "destination". In Karasudani et al., the source is the computer 1, and the destination is the first storage device 20.

Second, the Examiner states in his rejection that "...during the idle period the controller retrieves the uncompressed data stored on the backup storage device, compresses the retrieved data (i.e., archive file is backed up and backup file is compressed at S2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26), and then re-stores the compressed data on the backup storage device (S2, fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26)." The Appellant respectfully disagrees with this reading of Karasudani et al.

Karasudani et al. teaches that data files from one storage section 20 are duplicated as data files and/or an archive file in compressed or uncompressed form, to the other storage section 30. Karasudani et al. does not teach or suggest that data files from the first storage section 20 are retrieved, compressed, and re-stored on the <u>same</u> backup storage device 20 in a non-duplicative manner.

In contrast to Karasudani et al., claim 28 is directed toward a storage system that requires "a primary storage location including an input/output port; a backup storage device; and a controller that transmits data between the primary storage location and the backup storage device according to a duty cycle having a predetermined backup window period when uncompressed data from the primary storage location is copied to the backup storage device, and an idle period when uncompressed data from the primary storage location is not being copied in uncompressed form to the backup storage device; wherein during the idle period the controller retrieves the uncompressed data stored on the backup storage device, compresses the retrieved data, and then re-stores the compressed data on the backup storage device." These features are not taught or suggested by the Karasudani et al. Therefore, the rejection of claim 28 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed. Because claim 29 depends from claim 28, a rejection of claim 29 is also unsupported and should therefore be reversed.

<u>Claims 31, 13-15 and 19-22</u>

The Examiner states in the Final Rejection with respect to claim 31 that "Karasudani teaches a controller that copies uncompressed data from the primary storage location to the backup storage device during a predetermined backup period, (i.e., backup from source to destination fig. 19) is copied to the backup storage device (col. 11, lines 5-29, col. 3, lines 25-33) retrieves the uncompressed data from the backup storage device (archive file s1 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26), compresses the retrieved data (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5,

lines 3-26), and then re-stores the compressed data on the backup storage device during an idle period that begins following a predetermined time period of inactivity through the input/output port (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26)."

The Appellant respectfully submits that this statement is inaccurate. Karasudani et al. does not make this distinction between a backup window period and an idle period that follows a predetermined period of inactivity through an input/output port. Karasudani et al. is completely silent on the timing of copying data from the first storage device 20 to the second storage device 30 relative to data being copied to the first storage device 20 from the computer 1. Karasudani et al. does not teach or suggest that data files from the first storage section 20 are retrieved, compressed, and re-stored on the same backup storage device 20. Moreover, the portions of the reference cited by the Examiner do not stand for the propositions being asserted by the Examiner.

In contrast to Karasudani et al., claim 31 requires "a primary storage location including an input/output port; a backup storage device; and a controller that copies uncompressed data from the primary storage location to the backup storage device during a predetermined backup period, and retrieves the uncompressed data from the backup storage device, compresses the retrieved data, and then re-stores the compressed data on the backup storage device during an idle period that begins following a predetermined time period of inactivity through the input/output port." These features are not taught or suggested by Karasudani et al. Therefore, the rejection of claim 31 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed. Because claims 13-15 and 19-22 depend from claim 31, the rejection of these claims should also be reversed.

Claim 16

Claim 16 requires "a fiber channel controller coupled between the controller and the input/output port which comprises an optical transceiver." The Examiner cites (Col. 11, lines 5-29) in his rejection to support the proposition that Karasudani et al. teaches the above feature required by claim 16. A reading of this cited section, as well as the entire reference, is silent on this feature in claim 16. In other words, this feature is not taught or suggested by Karasudani et al. Therefore, the rejection of claim 16 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 17

Claim 17 requires "an ethernet controller coupled between the controller and the input/output port which comprises an ethernet transceiver." The Examiner cites (col. 8, lines 49-67 to col. 9, lines 1-67) in his rejection to support the proposition that Karasudani et al. teaches the above feature required by claim 17. A reading of this cited section, as well as the entire reference, is silent on this feature in claim 17. In other words, this feature is not taught or suggested by Karasudani et al. Therefore, the rejection of claim 17 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 18

Claim 18 requires "a network hub and bridge circuit coupled between the backup storage device and the controller." The Examiner cites (col. 8, lines 49-67 to col. 9, lines 1-67) in his rejection to support the proposition that Karasudani et al. teaches the above

feature required by claim 18. A reading of this cited section, as well as the entire reference, is silent on this feature in claim 18. In other words, this feature is not taught or suggested by Karasudani et al. Therefore, the rejection of claim 18 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claims 32, 2, 3 and 5-11

The Examiner states in the Final Rejection with respect to claim 32 that "Karasudani teaches copying uncompressed data during a predetermined backup window period from the primary storage location to the backup storage device (i.e., backup from source to destination fig. 19, col. 11, lines 5-29, col. 3, lines 25-33); compressing the data with a controller during an idle period defined by when uncompressed data is not being copied from the primary storage location to the backup storage device; (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26), re-storing the compressed data onto the backup storage device during the idle period (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26). Again, the Appellant respectfully submits that the Examiner is missing the point.

To the contrary, Karasudani et al. does not make any distinction between a backup window period and an idle period defined by when uncompressed data is not being copied from the primary storage location to the backup device. Karasudani et al. does not teach or suggest that data files from the first storage section 20 are retrieved, compressed, and re-stored on the same backup storage device 20. And once again, the portions of the reference cited by the Examiner do not stand for the propositions being asserted by the Examiner.

In contrast to Karasudani, claim 32 is directed toward a computer-implemented method that requires the steps of "copying uncompressed data during a predetermined backup window period from the primary storage location to the backup storage device; compressing the data with a controller during an idle period defined by when uncompressed data is not being copied from the primary storage location to the backup storage device; and re-storing the compressed data onto the backup storage device during the idle period." These steps are not taught or suggested by Karasudani et al. Therefore, the rejection of claim 32 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed. Further, because claims 2, 3 and 5-11 depend directly or indirectly from claim 32, the rejection of these claims should also be reversed.

Claim 4

Claim 4 requires the step of "successively repeating the receiving and storing of data during the backup window periods and retrieving, compressing and storing compressed data on the backup storage device during successive duty cycles respectively." As provided above, Karasudani et al. is silent on the idea of duty cycles established for backup window periods. Thus, these steps are not taught or suggested by Karasudani et al. Therefore, the rejection of claim 4 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 33

Claim 33 requires that "the step of compressing the data includes beginning the idle period following a predetermined time period of inactivity through the input/output port." As

provided above, this step is not taught or suggested by Karasudani et al. More specifically, the Examiner cites (col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26) as providing this teaching. The Appellant respectfully submits that this cited portion of the reference, and the remainder of the reference, does not address the features of claim 33. Therefore, the rejection of claim 33 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 34

Claim 34 requires the step of "interrupting the step of compressing the data when activity is detected through the input/output port." The Examiner states in the Final Rejection that this step is taught by Karasudani et al. at Col. 11, lines 5-29 and Col. 3, lines 25-33. The Appellant respectfully submits that this cited portion of the reference, and the remainder of the reference, does not address this step of claim 34. Therefore, the rejection of claim 34 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 35

Claim 35 requires the step of "interrupting the step of re-storing the compressed data when activity is detected through the input/output port." The Examiner states in the Final Rejection that this step is taught by Karasudani et al. at Col. 11, lines 5-29 and Col. 3, lines 25-33. Again, the Appellant respectfully submits that this cited portion of the reference, and the remainder of the reference, does not address this step of claim 35.

Therefore, the rejection of claim 35 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claims 36, 37, 39 and 40

With respect to claim 36, the Examiner states in the Final Rejection that "Karasudani teaches copying uncompressed data during a predetermined backup window period from the primary storage location to the backup storage device (i.e., backup from source to destination fig. 19, col. 11, lines 5-29, col. 3, lines 25-33); compressing the data with a controller during an idle period defined by when uncompressed data is not being copied from the primary storage location to the backup storage device; (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26), re-storing the compressed data onto the backup storage device during the idle period (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26). Again, the Appellant submits that this recitation of Karasudani et al. is not accurate.

First, the language expressed by the Examiner does not track with the language of claim 36. The Examiner has included language not included in claim 36. Second, as provided previously, Karasudani et al. does not make any distinction between a backup window period and an idle period that follows a predetermined period of inactivity through an input/output port. Karasudani et al. does not teach or suggest that data files from the first storage section 20 are retrieved, compressed, and re-stored on the same backup storage device 20.

In contrast to Karasudani et al., claim 36 is directed toward a computer-implemented method that requires the steps of "copying uncompressed data from the

primary storage location through the input/output port to the backup storage device; compressing the data copied to the backup storage device with a controller during an idle period that begins following a predetermined time period of inactivity through the input/output port; and re-storing the compressed data onto the backup storage device with the controller during the idle period." These steps are not taught or suggested by Karasudani et al. Therefore, the rejection of claim 36 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed. Further, because claims 37, 39 and 40 depend from claim 36, the rejection of these claims should also be reversed.

Claim 38

Claim 38 requires the step of " successively repeating the receiving and storing of data during the backup window periods and retrieving, compressing and storing compressed data on the backup storage device during successive duty cycles respectively." As provided above, Karasudani et al. is silent on the idea of duty cycles established for backup window periods. Thus, these steps are not taught or suggested by Karasudani et al. Therefore, the rejection of claim 38 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 41

Claim 41 requires the step of "interrupting the step of compressing the data when activity is detected through the input/output port." The Examiner states in the Final Rejection that this step is taught by Karasudani et al. at Col. 11, lines 5-29 and Col. 3, lines

25-33. The Appellant respectfully submits that this cited portion of the reference, and the remainder of the reference, does not address this step of claim 41. Therefore, the rejection of claim 41 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 42

Claim 42 requires the step of "interrupting the step of re-storing the compressed data when activity is detected through the input/output port." The Examiner states in the Final Rejection that this step is taught by Karasudani et al. at Col. 11, lines 5-29 and Col. 3, lines 25-33. Again, the Appellant respectfully submits that this cited portion of the reference, and the remainder of the reference, does not address this step of claim 42. Therefore, the rejection of claim 42 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

Claim 43

With respect to claim 43, the Examiner states in the Final Rejection that "Karasudani teaches a controller that transmits data between the primary storage location and the backup storage device (i.e., backup from source to destination fig. 19, col. 11, lines 5-29, col. 3, lines 25-33) according to a duty cycle having a backup window period and an idle period (col. 11, lines 5-29, col. 3, lines 25-33), the controller transmitting uncompressed data from the primary storage location for copying to the backup storage device during the backup window period (i.e., archive file in fig. 5), the controller determining initiation of the idle period based on a predetermined time period of inactivity

of data transmission through the input/output port and terminating the idle period once data transmission through the input/output port occurs; (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26) wherein during the idle period, the controller initiates (i) compression of uncompressed data stored on the backup storage device, and (ii) restorage of compressed data onto the backup storage device (s2 in fig. 5, col. 11, lines 30-41, col. 12, lines 31-45, col. 5, lines 3-26)."

As provided above, Karasudani et al. does not distinguish between a backup window period and an idle period that follows a predetermined period of inactivity through an input/output port. Karasudani et al. is completely silent on the timing of copying data from the first storage device 20 to the second storage device 30 relative to data being copied to the first storage device 20 from the computer 1. Karasudani et al. does not teach or suggest that data files from the first storage section 20 are retrieved, compressed, and re-stored on the <u>same</u> backup storage device 20.

In addition, Karasudani et al. does not address duty cycles in the context of backup of data and retrieval, compression and restorage of data. Moreover, Karasudani et al. does not teach or suggest that the controller terminates an idle period upon detecting data transmission. Further, Karasudani et al. does not teach or suggest that the controller initiates, during the idle period, compression of data stored on the backup storage device, and restorage of compressed data back onto the backup storage device.

In contrast to Karasudani et al., claim 43 is directed to a storage system that requires "a primary storage location including an input/output port; a backup storage device; and a controller that transmits data between the primary storage location and the backup storage device according to a duty cycle having a backup window period and an

idle period, the controller transmitting uncompressed data from the primary storage location for copying to the backup storage device during the backup window period, the controller determining initiation of the idle period based on a predetermined time period of inactivity of data transmission through the input/output port and terminating the idle period once data transmission through the input/output port occurs; wherein during the idle period, the controller initiates (i) compression of uncompressed data stored on the backup storage device, and (ii) restorage of compressed data onto the backup storage device." These features are not taught or suggested by Karasudani et al. Therefore, the rejection of claim 43 under 35 U.S.C. § 102(e) is unsupported by Karasudani et al., and should consequently be reversed.

VIII. Conclusion

For the reasons advanced above, the Appellant respectfully submits that each claim pending in the instant application is patentable, the rejections by the Examiner should be reversed, and all claims should be allowed.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage of fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 50-1141, and please credit any excess fees to such deposit account.

Dated this 2nd day of August, 2007.

Respectfully submitted,

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APPENDIX OF CLAIMS

2. The method of claim 32, wherein the compression of data is performed using a software data compression algorithm.

3. The method of claim 2, wherein the software data compression algorithm includes one of the following types of algorithms: a zip; a gnuzip; a bzip; a b2zip; a Lempil Ziv; and a LZS (Lempil Ziv Stac).

4. The method of claim 32, further comprising successively repeating the receiving and storing of data during the backup window periods and retrieving, compressing and storing compressed data on the backup storage device during successive duty cycles respectively.

5. The method of claim 32, wherein the backup storage device is an emulated tape drive containing an array of hard drives.

6. The method of claim 32, wherein the data is downloaded over a network from a primary storage location.

7. The method of claim 6, wherein the data is downloaded over a fiber-channel connection between the primary storage location and the backup storage device.

8. The method of claim 6, wherein the data is downloaded over an ethernet connection between the primary storage location and the backup storage device.

9. The method of claim 6, wherein the primary storage location and the backup storage device are part of a storage array network.

10. The method of claim 6, wherein the primary storage location and the backup storage device are part of a network attached storage configuration.

11. The method of claim 32, wherein the backup storage device is directly electrically connected to a server.

13. The storage system of claim 31, wherein the controller is further configured to execute a software algorithm to compress the retrieved data.

14. The storage system of claim 13, wherein the software algorithm includes one of the following types of algorithms a zip; a gnuzip; a bzip; a b2zip; a Lempil Ziv; and a LZS (Lempil Ziv Stac).

15. The storage system of claim 13, wherein the software algorithm is stored in a memory associated with the controller.

16. The storage system of claim 31, further comprising a fiber channel controller coupled between the controller and the input/output port which comprises an optical transceiver.

17. The storage system of claim 31, further comprising an ethernet controller coupled between the controller and the input/output port which comprises an ethernet transceiver.

18. The storage system of claim 31, further comprising a network hub and bridge circuit coupled between the backup storage device and the controller.

19. The storage system of claim 31, further comprising:

a primary storage location that allows transmission of uncompressed data from the primary storage location to the backup storage device.

20. The storage system of claim 19, wherein the network connection is one of the following types of network connections: fiber channel or ethernet.

21. The storage system of claim 19, wherein the primary storage location and the backup storage device are arranged in one of the following: a storage attached network or network attached storage configuration.

22. The storage system of claim 19, further comprising a plurality of clients and servers coupled to the primary storage location through a client network.

28. A storage system comprising:

a primary storage location including an input/output port;

a backup storage device; and

a controller that transmits data between the primary storage location and the backup storage device according to a duty cycle having a predetermined backup window period when uncompressed data from the primary storage location is copied to the backup storage device, and an idle period when uncompressed data from the primary storage location is not being copied in uncompressed form to the backup storage device;

wherein during the idle period the controller retrieves the uncompressed data stored on the backup storage device, compresses the retrieved data, and then re-stores the compressed data on the backup storage device.

29. The storage system of claim 28, wherein the compression of data is performed using a software data compression algorithm.

30. The storage system of claim 28, wherein the backup storage device is an emulated tape drive containing an array of hard drives.

31. A storage system comprising:

a primary storage location including an input/output port;

a backup storage device; and

a controller that copies uncompressed data from the primary storage location to the backup storage device during a predetermined backup period, and retrieves the uncompressed data from the backup storage device, compresses the retrieved data, and then re-stores the compressed data on the backup storage device during an idle period that begins following a predetermined time period of inactivity through the input/output port.

32. A computer-implemented method for storing data from a primary storage location having an input/output port onto a backup storage device, the method comprising the steps of:

copying uncompressed data during a predetermined backup window period from the primary storage location to the backup storage device;

compressing the data with a controller during an idle period defined by when uncompressed data is not being copied from the primary storage location to the backup storage device; and

re-storing the compressed data onto the backup storage device during the idle period.

33. The method of claim 32 wherein the step of compressing the data includes beginning the idle period following a predetermined time period of inactivity through the input/output port.

34. The method of claim 32 further comprising the step of interrupting the step of compressing the data when activity is detected through the input/output port.

35. The method of claim 32 further comprising the step of interrupting the step of re-storing the compressed data when activity is detected through the input/output port.

36. A computer-implemented method for storing data from a primary storage location having an input/output port onto a backup storage device, the method comprising the steps of:

copying uncompressed data from the primary storage location through the input/output port to the backup storage device;

compressing the data copied to the backup storage device with a controller during an idle period that begins following a predetermined time period of inactivity through the input/output port; and

re-storing the compressed data onto the backup storage device with the controller during the idle period.

37. The method of claim 36, wherein the compression of data is performed using a software data compression algorithm.

38. The method of claim 36, further comprising successively repeating the receiving and storing of data during the backup window periods and retrieving, compressing and storing compressed data on the backup storage device during successive duty cycles respectively.

39. The method of claim 36, wherein the backup storage device is an emulated tape drive containing an array of hard drives.

40. The method of claim 36, wherein the data is downloaded over a network from a primary storage location.

41. The method of claim 36 further comprising the step of interrupting the step of compressing the data when activity is detected through the input/output port.

42. The method of claim 36 further comprising the step of interrupting the step of re-storing the compressed data when activity is detected through the input/output port.

43. A storage system comprising:

a primary storage location including an input/output port;

a backup storage device; and

a controller that transmits data between the primary storage location and the backup storage device according to a duty cycle having a backup window period and an idle period, the controller transmitting uncompressed data from the primary storage location for copying to the backup storage device during the backup window period, the controller determining initiation of the idle period based on a predetermined time period of inactivity of data transmission through the input/output port and terminating the idle period once data transmission through the input/output port occurs;

wherein during the idle period, the controller initiates (i) compression of uncompressed data stored on the backup storage device, and (ii) restorage of compressed data onto the backup storage device.

APPENDIX OF EVIDENCE

The Appellant did not submit any evidence which has been relied upon by the Appellant during prosecution in this matter, nor for purposes of the instant appeal.

APPENDIX OF RELATED PROCEEDINGS

Because no related proceedings have occurred, no decisions have been rendered by a court or the Board relative to this matter.